

IN THE CLAIMS

Please amend the claims in accordance with the following rewritten claims in clean form. Applicant includes herewith an Attachment for Claim Amendments showing a marked up version of each amended claim.

12. (Amended) A permanent magnet electric machine with reduced cogging torque, comprising:

a rotor; and

a plurality of axial rotor sections defined on a radially outer surface of said rotor,

wherein each of said axial rotor sections include a set of permanent magnets,

wherein axial rotor sections are rotationally offset and said edges of said permanent magnets define stair step interfaces, and

wherein said permanent magnets of said rotor include substantially unmagnetized straight skewed areas.

13. The permanent magnet electric machine of claim 12 wherein said substantially unmagnetized straight skewed areas align with said stair step interfaces.

14. The permanent magnet electric machine of claim 13 wherein said unmagnetized skewed areas have a stair step-like shape with clipping.

15. The permanent magnet electric machine of claim 12 wherein a first offset angle of said axial rotor sections is approximately equal to 360 mechanical degrees divided by a least common multiple of a first number of a stator slots of said machine and a second number of rotor poles of said rotor, and divided by a third number of said axial rotor segments.

16. (Amended) The permanent magnet electric machine of claim 12 wherein each of said sets of permanent magnets include m magnet poles and a magnetizing fixture that is used to magnetize said permanent magnets after assembly includes at least m conductor slots.

17. The permanent magnet electric machine of claim 15 wherein a skew angle of a magnetizing fixture is approximately equal to 360 mechanical degrees divided by the least common multiple of said first number and said second number, multiplied by a stack length of said magnetizing fixture, and divided by a stack length of said rotor.

18. The permanent magnet electric machine of claim 12 wherein said permanent magnets are one of arc magnets and breadloaf magnets.

30. A permanent magnet electric machine with reduced cogging torque, comprising:
a rotor; and

a plurality of axial rotor sections defined on a radially outer surface of said rotor,

wherein each of said axial rotor sections include a set of permanent magnets that are initially attached in an unmagnetized state and that have opposite edges that are aligned with an axis of said rotor,

wherein said permanent magnets of said rotor include at least one substantially unmagnetized stair step area and at least one straight skewed unmagnetized area.

31. The permanent magnet electric machine of claim 31 wherein said unmagnetized stair step area and said unmagnetized straight skewed area overlies one another thus forming an unmagnetized area with clipping.

Please add the following new claims.

32. (New) The permanent magnet electric machine of claim 12 wherein said permanent magnets are magnetized after assembly.

33. (New) The permanent magnet electric machine of claim 12 wherein a magnetic field that is impressed in said permanent magnets increases from a minimum value adjacent to one stair step interface to a maximum value approximately halfway between said one stair step interface and an adjacent stair step interface.

34. (New) The permanent magnet electric machine of claim 12 wherein said permanent magnets have a generally rectangular cross-section.

35. (New) The permanent magnet electric machine of claim 30 wherein said permanent magnets have a generally rectangular cross-section.

36. (New) The permanent magnet electric machine of claim 30 wherein a magnetic field that is impressed in said permanent magnets increases from a minimum value adjacent to one stair step interface to a maximum value approximately halfway between said one stair step interface and an adjacent stair step interface.

37. (New) A permanent magnet electric machine with reduced cogging torque, comprising:

a rotor; and

a plurality of axial rotor sections defined on a radially outer surface of said rotor,

wherein each of said axial rotor sections include a set of permanent magnets that are initially attached in an unmagnetized state and that have a generally rectangular cross-section,

wherein said permanent magnets of said rotor include at least one substantially unmagnetized stair step area and at least one straight skewed unmagnetized area, and

wherein a magnetic field that is impressed in said permanent magnets increases from a minimum value adjacent to one stair step interface to a maximum value approximately halfway between said one stair step interface and an adjacent stair step interface.

38. (New) The permanent magnet electric machine of claim 37 wherein said substantially unmagnetized straight skewed areas align with said stair step interfaces.

39. (New) The permanent magnet electric machine of claim 38 wherein said unmagnetized skewed areas have a stair step-like shape with clipping.

40. (New) The permanent magnet electric machine of claim 37 wherein a first offset angle of said axial rotor sections is approximately equal to 360 mechanical degrees divided by a least common multiple of a first number of a stator slots of said machine and a second number of rotor poles of said rotor, and divided by a third number of said axial rotor segments.